1. Description

1.1. Project

Project Name	mgmt
Board Name	custom
Generated with:	STM32CubeMX 6.7.0
Date	04/06/2023

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x0 Value Line
MCU name	STM32F070CBTx
MCU Package	LQFP48
MCU Pin number	48

1.3. Core(s) information

Core(s)	Arm Cortex-M0

2. Pinout Configuration
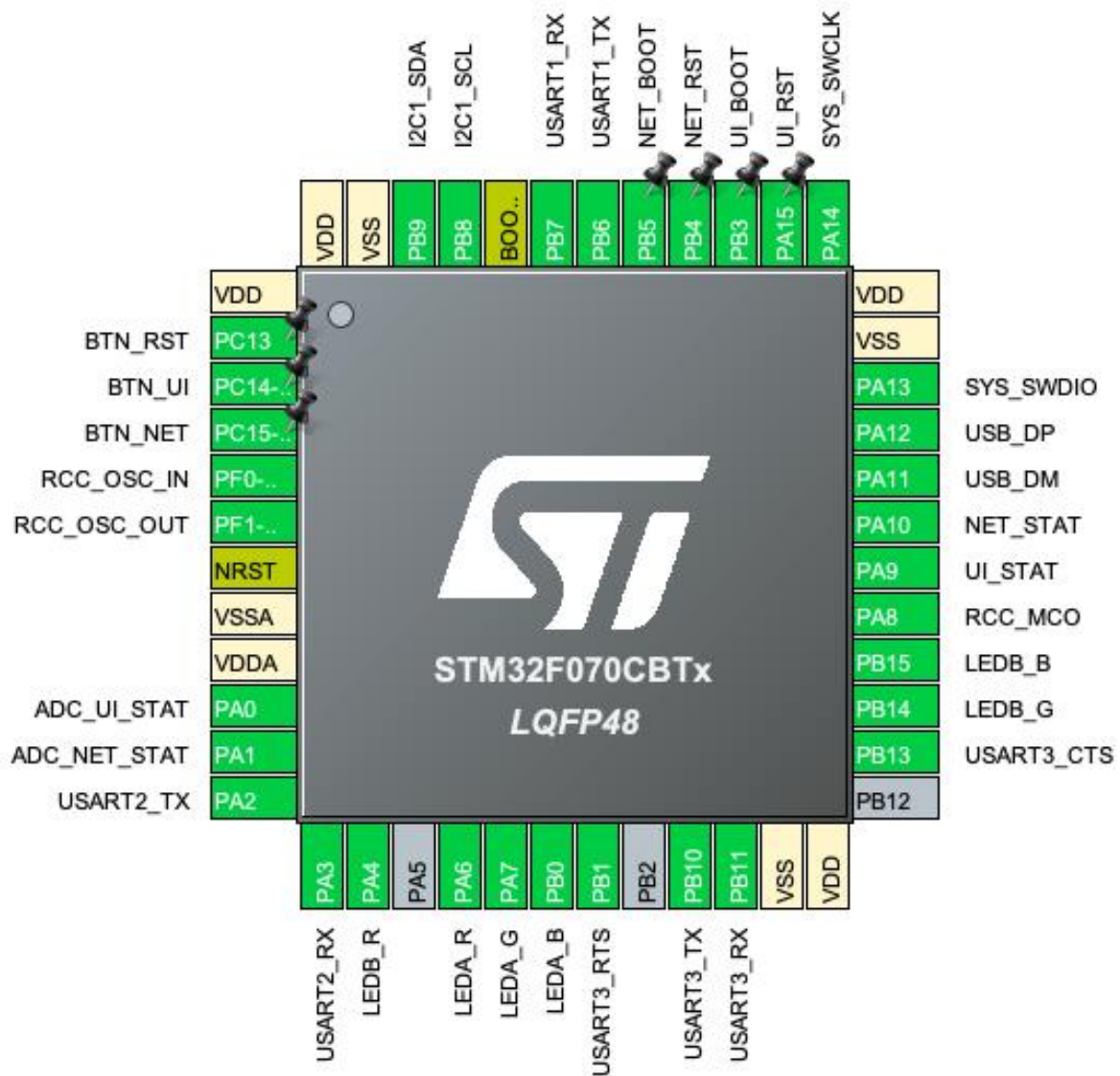
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PC13 *	I/O	GPIO_Input	BTN_RST
3	PC14-OSC32_IN *	I/O	GPIO_Input	BTN_UI
4	PC15-OSC32_OUT *	I/O	GPIO_Input	BTN_NET
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
10	PA0	I/O	ADC_IN0	ADC_UI_STAT
11	PA1	I/O	ADC_IN1	ADC_NET_STAT
12	PA2	I/O	USART2_TX	
13	PA3	I/O	USART2_RX	
14	PA4	I/O	TIM14_CH1	LEDB_R
16	PA6	I/O	TIM3_CH1	LEDA_R
17	PA7	I/O	TIM3_CH2	LEDA_G
18	PB0	I/O	TIM3_CH3	LEDA_B
19	PB1	I/O	USART3_RTS	
21	PB10	I/O	USART3_TX	
22	PB11	I/O	USART3_RX	
23	VSS	Power		
24	VDD	Power		
26	PB13	I/O	USART3_CTS	
27	PB14	I/O	TIM15_CH1	LEDB_G
28	PB15	I/O	TIM15_CH2	LEDB_B
29	PA8	I/O	RCC_MCO	
30	PA9	I/O	TIM1_CH2	UI_STAT
31	PA10	I/O	TIM1_CH3	NET_STAT
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
34	PA13	I/O	SYS_SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_SWCLK	
38	PA15 *	I/O	GPIO_Output	UI_RST
39	PB3 *	I/O	GPIO_Output	UI_BOOT

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
40	PB4 *	I/O	GPIO_Output	NET_RST
41	PB5 *	I/O	GPIO_Output	NET_BOOT
42	PB6	I/O	USART1_TX	
43	PB7	I/O	USART1_RX	
44	BOOT0	Boot		
45	PB8	I/O	I2C1_SCL	
46	PB9	I/O	I2C1_SDA	
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration
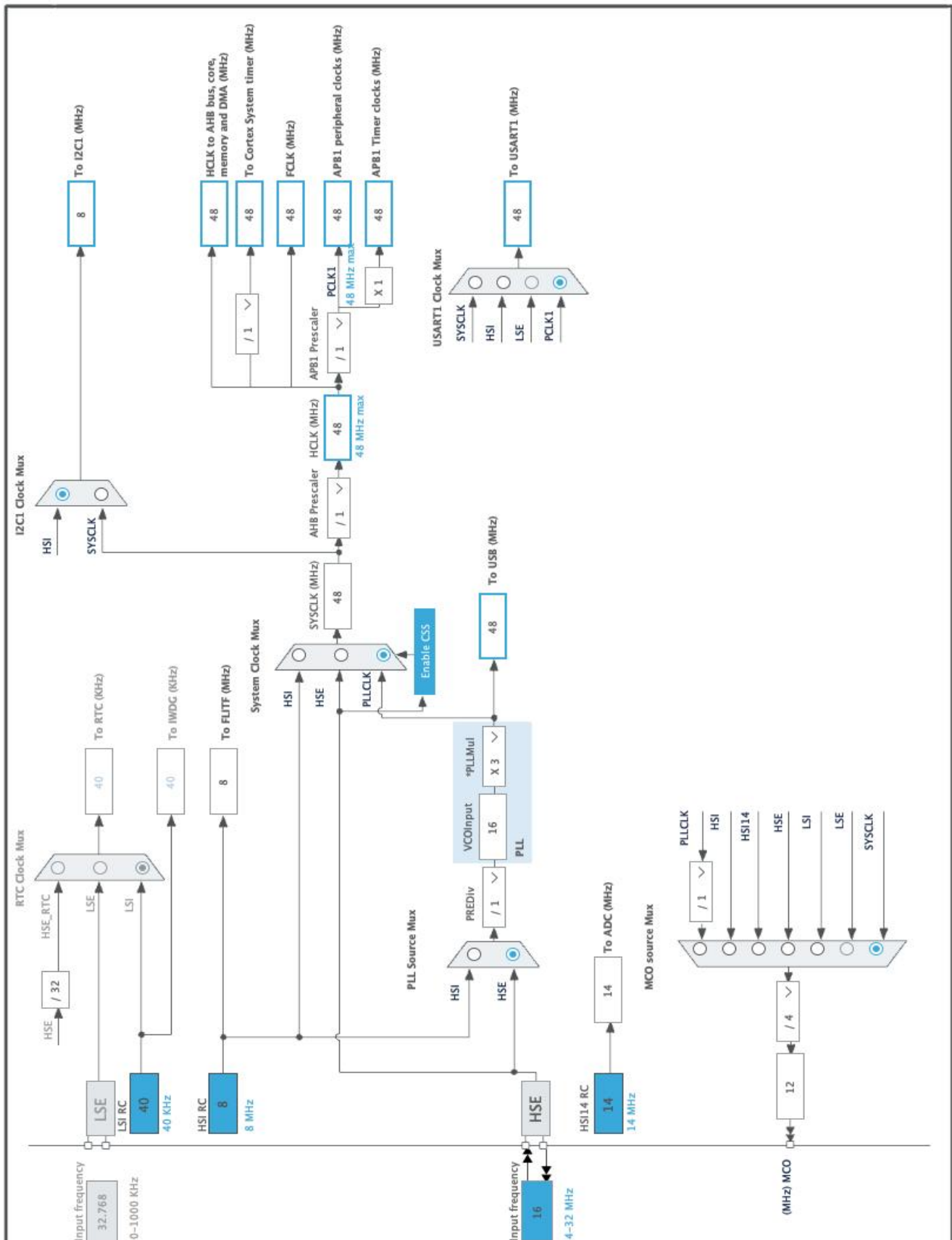
5. Software Project

5.1. Project Settings

Name	Value
Project Name	mgmt
Project Folder	/Users/fluffy/src/hactar/firmware/mgmt
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_F0 V1.11.4
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_USB_PCD_Init	USB
4	MX_TIM7_Init	TIM7
5	MX_USART1_UART_Init	USART1
6	MX_USART2_UART_Init	USART2
7	MX_USART3_UART_Init	USART3
8	MX_ADC_Init	ADC
9	MX_I2C1_Init	I2C1
10	MX_TIM1_Init	TIM1
11	MX_TIM3_Init	TIM3

Rank	Function Name	Peripheral Instance Name
12	MX_TIM14_Init	TIM14
13	MX_TIM15_Init	TIM15

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x0 Value Line
MCU	STM32F070CBTx
Datasheet	DS10697_Rev2

6.2. Parameter Selection

Temperature	25
Vdd	3.6

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.6	3.6
Voltage Source	Battery	Battery
Range	No Scale	No Scale
Fetch Type	FLASH	n/a
CPU Frequency	48 MHz	0 Hz
Clock Configuration	HSI PLL All IPs ON	Regulator_LP
Clock Source Frequency	8 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	24.34 mA	6.5 µA
Duration	0.1 ms	0.9 ms
DMIPS	0.0	0.0
Ta Max	100.18	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	2.44 mA
Battery Life	1 month, 27 days, 13 hours	Average DMIPS	0.0 DMIPS

6.6. Chart
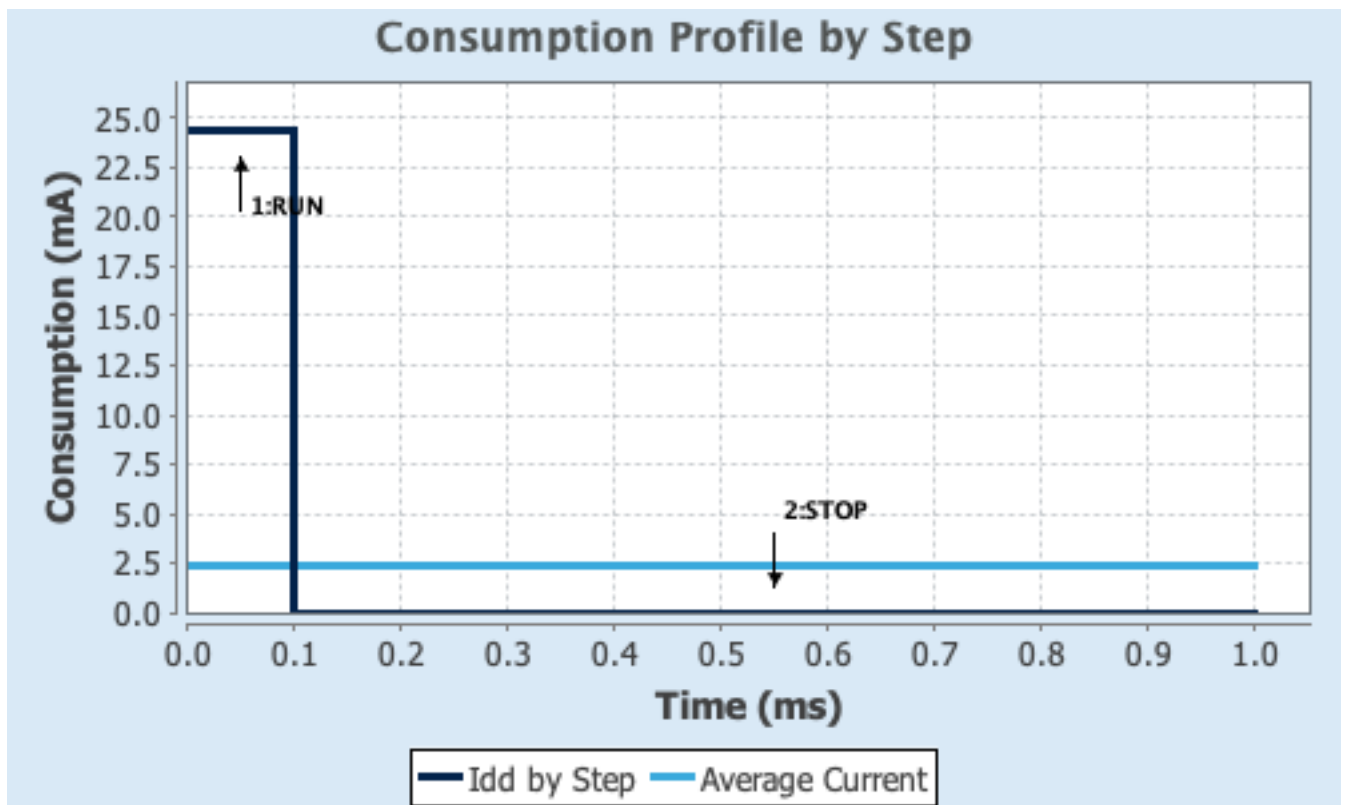
7. Peripherals and Middlewares Configuration

7.1. ADC
mode: IN0
mode: IN1

7.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	Forward
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled
Low Power Auto Power Off	Disabled

ADC_Regular_ConversionMode:

Sampling Time	1.5 Cycles
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false
Low Threshold	0

7.2. I2C1
I2C: I2C

7.2.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x2000090E

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.3. RCC
High Speed Clock (HSE): Crystal/Ceramic Resonator
mode: Master Clock Output
7.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSI14 Calibration Value	16
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

7.4. SYS
mode: Debug Serial Wire
Timebase Source: SysTick

7.5. TIM1
Channel2: Input Capture direct mode
Channel3: Input Capture direct mode
7.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**48 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division

Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Input Capture Channel 2:

Polarity Selection	**Both Edges ***
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

Input Capture Channel 3:

Polarity Selection	**Both Edges ***
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

7.6. TIM3
Trigger Source: ITR0
Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
Channel3: PWM Generation CH3
7.6.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**48000 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable
Slave Mode Controller	Slave mode disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable

CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High

7.7. TIM7
mode: Activated
7.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**48 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000 ***
auto-reload preload	Disable

7.8. TIM14
mode: Activated
Channel1: PWM Generation CH1
7.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

PWM Generation Channel 1:

Mode	PWM mode 1

Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High

7.9. TIM15
Channel1: PWM Generation CH1
Channel2: PWM Generation CH2
7.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable

Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

7.10. USART1
Mode: Asynchronous
7.10.1. Parameter Settings:

Basic Parameters:

Baud Rate	**57600 ***
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.11. USART2
Mode: Asynchronous
7.11.1. Parameter Settings:

Basic Parameters:

Baud Rate	**57600 ***
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.12. USART3
Mode: Asynchronous
Hardware Flow Control (RS232): CTS/RTS
7.12.1. Parameter Settings:

Basic Parameters:

Baud Rate	**57600** *
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

7.13. USB

mode: Device (FS)

7.13.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Physical interface	Internal Phy

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled

* User modified value

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC	PA0	ADC_IN0	Analog mode	No pull-up and no pull-down	n/a	ADC_UI_STAT
	PA1	ADC_IN1	Analog mode	No pull-up and no pull-down	n/a	ADC_NET_STAT
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
	PB9	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
	PA8	RCC_MCO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM1	PA9	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	UI_STAT
	PA10	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	NET_STAT
TIM3	PA6	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDA_R
	PA7	TIM3_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDA_G
	PB0	TIM3_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDA_B
TIM14	PA4	TIM14_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDB_R
TIM15	PB14	TIM15_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDB_G
	PB15	TIM15_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	LEDB_B
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
USART3	PB1	USART3_RTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB10	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB11	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PB13	USART3_CTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PC13	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_RST
	PC14-OSC32_IN	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_UI
	PC15-OSC32_OUT	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_NET

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	UI_RST
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	UI_BOOT
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NET_RST
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	NET_BOOT

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
System service call via SWI instruction	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	3	0
TIM7 global interrupt	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC interrupt	unused		
TIM1 break, update, trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
TIM14 global interrupt	unused		
TIM15 global interrupt	unused		
I2C1 event global interrupt / I2C1 wake-up interrupt through EXTI line 23	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		
USART3 and USART4 global interrupts	unused		
USB global interrupt / USB wake-up interrupt through EXTI line 18	unused		

8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
System service call via SWI instruction	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true
TIM7 global interrupt	false	true	true

* User modified value

9. System Views

9.1. Category view

9.1.1. Current

10. Docs & Resources

Type	Link
IBIS models	https://www.st.com/resource/en/ibis_model/stm32f0_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32f0_svd.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32f0_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32f0_svd.zip
Presentations	https://www.st.com/resource/en/product_presentation/gt_stm32f0-l0.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-usb-c-pd-solutions-presentation.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Training Material	https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf
Brochures	https://www.st.com/resource/en/brochure/breveco0518.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32f0.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstmcsuite.pdf
Flyers	https://www.st.com/resource/en/flyer/fldpstpfc11120.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32_authentication_can.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-

	guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2834-how-to-get-the-best-adc-accuracy-in-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2945-stm8s-and-stm32-mcus-a-consistent-832bit-product-line-for-painless-migration-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3070-managing-the-driver-enable-signal-for-rs485-and-iolink-communications-with-the-stm32s-usart-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3236-increase-the-number-of-touchkeys-for-touch-sensing-applications-on-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3364-migration-and-compatibility-guidelines-for-stm32-microcontroller-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3371-using-the-hardware-realtime-clock-rtc-in-stm32-f0-f2-f3-f4-and-l1-series-of-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3960-esd-considerations-for-touch-sensing-applications-on-mcus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4013-stm32-
crossseries-timer-overview-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4088-migrating-
between-stm32f1-and-stm32f0-series-microcontrollers-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4099-implementation-
of-transmitters-and-receivers-for-infrared-remote-control-protocols-with-
mcus-of-the-stm32f0-and-stm32f3-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4221-i2c-protocol-
used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4229-how-to-
implement-a-vocoder-solution-using-stm32-microcontrollers-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4277-using-stm32-
device-pwm-shutdown-features-for-motor-control-and-digital-power-
conversion-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4299-improve-
conducted-noise-robustness-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4310-sampling-
capacitor-selection-guide-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4312-design-with-
surface-sensors-for-touch-sensing-applications-on-mcus-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4316-tuning-a-touch-
sensing-application-on-mcus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4325-getting-started-
with-stm32f030xx-and-stm32f070xx-series-hardware-development-
stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4566-extending-the-
dac-performance-of-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4617-migrating-
between-stm32f0-and-stm32l0-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf

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